## REMARKS

This Amendment is filed in response to the Office Action mailed on August 8, 2006. All objections and rejections are respectfully traversed.

Claims 1-41 are in the case.

Claims 1, 16-17, 19-26, 32, and 36-37 were amended to better claim the invention.

Claims 39-41 were added to better claim the invention.

### Amendment to Figure 1

Figure 1 has been amended to correct a minor typographical error. Specifically, in box 100, both occurrences of the word "Snaphot" have been amended to "Snapshot". A complete substitute Figure set is provided herewith.

### Claim Objections

At Paragraph 2 of the Office Action mailed on August 8, 2006, claims 1, 16, and 25 were objected to as containing informalities. Applicant notes that these claims have been amended to better claim the invention. Applicant respectfully urges that claims 1, 16, and 25 are in condition for allowance.

### Claims Rejected Under 35 U.S.C. § 112, Second Paragraph

At Paragraph 3 of the Office Action, claims 17, 19, 22-24, and 37 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicant notes that these

claims have been amended to better claim the invention. Applicant respectfully urges that claims 17, 19, 22-24, and 37 are in condition for allowance under 35 U.S.C. § 112, second paragraph.

## Claims Rejected Under 35 U.S.C. § 101

Claims 1-18 and 20-38:

At Paragraph 5 of the Office Action, claims 1-18 and 20-38 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. The Examiner asserted that, "The claims are useful and concrete, but they fail to product a tangible result because neither the method or a result is stored to a non-volatile storage nor is any real-world result reported, for example to a user." (Office Action, Paragraph 5). Applicant respectfully traverses the rejection.

Amended claim 1, representative in part of the other rejected claims, recites "*reporting a difference between the first data set and the second data set*". Applicant respectfully urges that claim 1 produces a practical result and is therefore tangible within the meaning of 35 U.S.C. § 101. The remaining rejected independent claims likewise recite *reporting a difference* or *recording* a practical result. Therefore, Applicant respectfully urges that independent claims 1, 17, 20-22, 32, and 36-37 are directed to statutory subject matter and are in condition for allowance under 35 U.S.C. § 101.

The remaining rejected dependent claims are believed to be dependent from allowable base claims and likewise in condition for allowance.

Additional § 101 Rejections:

Also at Paragraph 5 of the Office Action, claims 17-18, 32, and 35-38 were rejected under 35 U.S.C. § 101 as disclosing a system but not describing any hardware.

Applicant respectfully traverses the rejection, as follows:

Additional § 101 Rejections – Claims 17 and 18:

Applicant first addresses the rejection of independent claim 17, which recites:

17.    *A system* for comparing a first data set with a second data set, the system *comprising*:

> (a) *means for placing* each entry of the first data set in a hash table;

> (b) *means for selecting* an entry from the second data set;

> (c) *means for looking up* the selected entry in the hash table;

> (d) *means for removing*, in response to locating the selected entry in the hash table, the selected entry from the hash table;

> (e) *means for determining* if additional second data set entries exist;

> (f) *means for looping* to step (b) in response to identifying additional second data set entries; and

> (g) *means for reporting* a difference between the first data set and the second data set in response to at least one first data set entry remaining in the hash table.

Applicant respectfully urges that claim 17 is directed to statutory subject matter, claimed in accordance with 35 U.S.C. § 112, sixth paragraph, which reads:

> "An element in a claim for a combination may be expressed as a means or step for performing a specified function *without the recital of structure, material, or acts in support thereof,* and such claim shall be construed to cover the corresponding structure, material, or acts described in

the specification and equivalents thereof." (35 U.S.C. § 112) (emphasis added).

The Manual of Patent Examining Procedure (MPEP) further notes: "The USPTO must apply 35 U.S.C. 112, sixth paragraph in appropriate cases, and give claims their broadest reasonable interpretation, in light of and consistent with the written description of the invention in the application." (MPEP § 2181(I), 8th Ed., 4th Rev.).

As one example of a corresponding structure described in the Specification, Applicant notes the first full paragraph of Specification page 12, which teaches, in part: "It will be understood to those skilled in the art that the inventive technique described herein may apply to any type of special-purpose computer (e.g., a file serving appliance) or general-purpose computer, including a standalone computer, embodied as a storage system." (Applicant's Specification, page 12, lines 1-4).

Therefore, Applicant respectfully urges that claim 17 is in condition for allowance under 35 U.S.C. § 101. Claim 18 depends from claim 17 and is likewise believed to be in condition for allowance.

Additional § 101 Rejections – Claims 32 and 35-38:

Applicant next addresses the rejection of claims 32 and 35-38. Applicant respectfully points out that amended independent claim 32 recites, in part, "*one or more storage disks*"; amended independent claim 36 recites, in part, "*a processor*"; and amended independent claim 37 recites, in part, "*a computer*". Applicant respectfully urges that claims

32, 36, and 37 are directed to statutory subject matter within the meaning of 35 U.S.C. § 101.

Claims 35 and 38 depend from claims 32 and 37, respectively. Therefore, Applicant respectfully urges that claims 32 and 35-38 are in condition for allowance under 35 U.S.C. § 101.

## Claims Rejected Under 35 U.S.C. § 103(a) – Dada

At Paragraph 7 of the Office Action, claims 1-3, 5-6, 9, 17, and 19-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dada, U.S. Patent Application Publication No. 2004/0093347 A1, published on May 13, 2004 (hereinafter "Dada"). Applicant respectfully traverses the rejection.

Amended claim 1, representative in part of the other rejected claims, sets forth:

1.    A method for comparing a first order-independent data set comprising unique elements with a second order-independent data set comprising unique elements, the method comprising the steps of:

(a) for each entry in the first data set, placing the entry in a hash table;

(b) selecting an entry from the second data set;

(c) looking up the selected entry in the hash table;

(d) *removing, in response to locating the selected entry in the hash table, the selected entry from the hash table*;

(e) determining if additional second data set entries exist;

(f) looping to step (b) in response to identifying additional second data set entries; and

(g) reporting a difference between the first data set and the second data set in response to at least one first data set entry remaining in the hash table.

14

By way of background, Dada discloses a mechanism for comparing content within data structures. (Dada, Abstract). Specifically, Dada discloses XML documents as the data structures, wherein the content to be compared is marked by XML tags within the documents. (Paragraphs 0016-0017).

In Dada, each XML document has a separate hash table. (Paragraphs 0022, 0023). XML tags extracted from each document serve as keys to the document's corresponding hash table. (Paragraphs 0022, 0023). As noted by the Examiner, Dada does not show "the hash values in the *same* hash table" as taught by Applicant. (Office Action, Paragraph 7) (emphasis added).

Significantly, to compare content, Dada compares every key of a document to every key of every other document. (Dada, Paragraphs 0026, 0028). If a key from one document is missing from the hash table of another document, Dada specifies a difference between the documents. (Paragraph 0026). If no keys are missing, Dada then compares the values associated with the keys. (Paragraph 0027).

In sharp contrast, Applicant claims *"removing, in response to locating the selected entry in the hash table, the selected entry from the hash table"*.

Applicant's claimed invention yields significant improvements over brute force comparison techniques, such as Dada, which require an exponential increase in time for each additional element to be compared. (*See* Applicant's Background, page 7, line 24 – page 8, line 6). Instead of comparing every key of a document to every key of every other document, Applicant claims *"removing, in response to locating the selected entry*

*in the hash table, the selected entry from the hash table*". Advantageously, as Applicant's procedure progresses, hash entries are removed, thereby enabling lookups to occur more and more quickly. (Applicant's Specification, page 9, lines 16-18).

Nowhere does Dada teach or suggest "*removing, in response to locating the selected entry in the hash table, the selected entry from the hash table*". In reference to this element of Applicant's claims, the Examiner cited Paragraph 0025 of Dada. (Office Action, Paragraph 7). Paragraph 0025 of Dada, however, discloses creating "a superset of keys that includes all of the keys appearing in either hash table." (Dada, Paragraph 0025). Paragraph 0025 does not disclose removing any entries from any hash table, therefore Applicant respectfully urges that the cited paragraph in no way renders obvious Applicant's "*removing, in response to locating the selected entry in the hash table, the selected entry from the hash table*", as claimed.

Applicant respectfully urges that Dada is legally insufficient to render claim 1 obvious under 35 U.S.C. § 103(a) because of the absence from Dada of Applicant's claimed novel "*removing, in response to locating the selected entry in the hash table, the selected entry from the hash table*". Therefore, independent claim 1 is believed to be in condition for allowance.

The remaining rejected independent claims 17 and 19-22 likewise recite, in part, "*removing... the selected entry from the hash table*" or "*removing, in response to locating an entry in the hash table, the located entry*". Therefore, independent claims 17 and 19-22 are also believed to be in condition for allowance.

The remaining rejected dependent claims 2-3, 5-6, 9, and 23-26 are believed to be dependent from allowable base claims and likewise in condition for allowance.

### Claims Rejected Under 35 U.S.C. § 103(a) – Dada & Bailey

At Paragraph 10 of the Office Action, claims 32-38 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dada in view of Bailey, *et al.*, U.S. Patent No. 6,473,767 B1, issued on Oct. 29, 2002 (hereinafter "Bailey").

Amended claim 32, representative in part of the other rejected claims, sets forth:

32.     A system for performing a consistency check of a source directory replicated to a destination directory by comparing entries in the source and destination directories, the system comprising:

one or more storage disks adapted to store one or more of a group consisting of the source directory and the destination directory; and

a process adapted to compare entries in the source directory with entries in the destination directory by walking the source and destination directories only once, whereby utilization of storage subsystems associated with the source and destination directories is limited by *only walking each of the source and destination directories once*, and further adapted to report a difference between the source directory and the destination directory.

As discussed above, in reference to claim 1, Dada discloses a brute force comparison technique wherein every key of a document is compared to every key of every other document. (Dada, Paragraphs 0022-0028). Furthermore, as noted by the Examiner, "Dada does not explicitly indicate 'directories'." (Office Action, Paragraph 10). The Examiner asserted, however, that Bailey discloses "directories". (Office Action, Paragraph 10).

17

Given that Dada implements a brute force comparison technique, Applicant respectfully urges that Dada is completely silent regarding Applicant's claimed *"only walking each of the source and destination directories once"*. As discussed above, Applicant's claimed invention improves on brute force techniques, such as Dada, which require an exponential increase in time for each additional element to be compared. (*See* Applicant's Background, page 7, line 24 – page 8, line 6). Bailey adds nothing in this regard, as it is directed to a file system supporting directories having "real data files" and "anti-files". (Bailey, Abstract).

Applicant further points out that independent claims 36 and 37 both recite, in part, *"remove matching entries from the hash table"*. Again, Bailey adds nothing in this regard. Even if Dada and Bailey were selectively combined, the combination would still lack Applicant's claimed *"only walking each of the source and destination directories once"* and *"remove matching entries from the hash table"*.

Therefore, Applicant respectfully urges that Dada and Bailey, either taken singly or taken in any combination, are legally insufficient to render claims 32 and 36-37 obvious under 35 U.S.C. § 103(a) because of the absence from each of the cited references of Applicant's claimed novel *"only walking each of the source and destination directories once"* and *"remove matching entries from the hash table"*.

The remaining rejected dependent claims 33-35 and 38 are believed to be dependent from allowable base claims and likewise in condition for allowance.

## Conclusion

Applicant notes that, at Paragraphs 8 and 9 of the Office Action, the remaining dependent claims 4, 7-8, 10-16, 18, and 27-31 were rejected under 35 U.S.C. § 103(a), in view of other references. These claims are believed to be dependent from allowable base claims and likewise in condition for allowance.

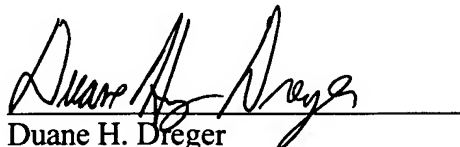All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable base claims and likewise in condition for allowance.

Favorable action is respectfully solicited.

Should the Examiner deem personal contact desirable in the disposition of this case, the Examiner is encouraged to call the undersigned attorney at (617) 951-2500.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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